

REMARKS / ARGUMENTS

I. General Remarks and Disposition of the Claims

Please consider the application in view of the following remarks. Applicants thank the Examiner for careful consideration of this application.

In this response, Applicants have amended claims 1, 6, 18, 23, 24, 30, and 31. Applicants respectfully submit that these proposed amendments do not raise new issues that would require further consideration and/or search, do not raise the issue of new matter, and put the application in better form. Therefore, Applicants respectfully request that these amendments be entered. Additionally, these amendments are supported by the specification as filed. All the amendments are made in a good faith effort to advance the prosecution on the merits of this case. It should not be assumed that the amendments made herein were made for reasons related to patentability. Applicants respectfully request that the above amendments be entered and further request reconsideration in light of the amendments and remarks contained herein.

II. Remarks Regarding Rejections Under 35 U.S.C. § 102

Claims 1-2, 4-6, 16-19, 21, 24-25, and 27 stand rejected under 35 U.S.C. § 102(b) as being anticipated by US Patent 5,463,164 issued to Perkins et al. ("*Perkins*"). Applicants respectfully disagree. Applicants respectfully submit that the cited reference does not disclose each and every limitation of claims 1-2, 4-6, 16-19, 21, 24-25 and 27, as required to anticipate these claims under 35 U.S.C. § 102(b). See MPEP § 2131.

In particular, with respect to independent claims 1, 18, and 24, *Perkins* fails to disclose "generating an optimized number, spacing and size for two or more fractures in a subterranean formation." The spacing of two fractures is illustrated, for example, in Figure 2 of the instant application. Dimension "D" represents the spacing between fracture 202 and fracture 204. Depending on the particular orientation of the well, spacing between fractures may correlate to differences in true vertical depth and/or measured depth from one fracture to the next. See, instant application at para. [0065] and Figures 15-16. *Perkins* does not describe spacing of fractures. Rather, it describes the direction in which various fracture wings of a given fracture will propagate. In the example of Figures 1 and 2 of *Perkins*, the fracture is indicated at element 22, and

includes multiple fracture wings (22a, 22b), which may have secondary fracture wings extending therefrom (22c, 22d, 22e, 22f). No additional fractures are described in *Perkins*, and thus, no spacing of fractures is described. Notably, *Perkins* mentions that “[a]n estimate of how closely multiple fractures tend to be positioned can be gained by considering how quickly stresses or strains decay as lateral distance from a fracture increases.” See col. 5, lines 16-35. However, when read in context, it becomes clear that the “multiple fractures” of this passage refers to “fracture wings,” as illustrated in Figure 2. Thus, as with fracture wings 22a-22f, “fractures” 22g, 22h, etc. of Figure 2 are actually “fracture wings” of fracture 22. As such, multiple fractures are not disclosed in *Perkins*, and spacing therebetween is likewise not disclosed. Thus, the cited reference does not disclose each and every limitation of these claims. Therefore, Applicants respectfully assert that independent claims 1, 18, and 24 and their dependent claims are not anticipated by *Perkins*.

Further, with respect to dependent claim 4, *Perkins* fails to disclose “spacing the fractures a uniform distance from each other.” The passage cited at page 7 of the Office Action does not indicate multiple fractures as alleged, but instead states that “the fracture is a two-winged planar fracture which extends equally in two directions from the well.” Col. 6, lines 13-15. The Office Action also refers to Figure 1, stating that “the two fractures have uniform distance from each other based on the height.” Office Action at p. 5. However, Figure 1 does not show two fractures at all. Rather, Figure 1 shows a single fracture 22 with wings 22a and 22b. The specification makes clear that the fracture 22 has “opposed fracture wings 22a and 22b . . . [and] is defined by a height H_f and a lateral distance L from the centerline 13 of the well 10.” Col. 3, lines 49-54. Thus, the “height” to which the Office Action refers appears to be the height of the fracture, providing no indication of any distance between fractures, and thus lacking an indication of a “uniform distance” between fractures. Thus, *Perkins* does not anticipate claim 4.

Additionally, with respect to dependent claim 6, even if, *arguendo*, steps (a), (b), and (c) were deemed to be disclosed by *Perkins*, Applicants assert that *Perkins* does not disclose “repeating steps (a), (b), and (c) after each fracture is created.” Thus,

Perkins does not anticipate claim 6. For similar reasons, Applicants assert that *Perkins* does not anticipate claims 21 or 27.

Further, with respect to dependent claim 17, Applicants disagree that *Perkins* discloses “wherein the wellbore further comprises one or more laterals.” The Office Action relies on “Lateral distance L” of Figure 1 for the proposition. However the “lateral distance L” refers to a dimension (i.e., fracture length), and is not an indication of a “lateral” as reasonably interpreted in light of the instant specification. Applicants argue that “[t]he PTO’s construction here, though certainly broad, is unreasonably broad. The broadest-construction rubric coupled with the term “comprising” does not give the PTO an unfettered license to interpret claims to embrace anything remotely related to the claimed invention. Rather, claims should always be read in light of the specification and teachings in the patent.” See *In re Suitco Surface, Inc.*, Cause No. 2009-1418 at p. 8 (Fed. Cir. 2010). The instant application teaches a lateral is a drilled portion of a well that can comprise multiple fractures. See, e.g., Figures 1 and 2 and para. [0009]. The “lateral” fracture length of *Perkins* is not a “lateral” as construed in light of the instant specification. As such, the cited reference does not disclose each and every limitation of claim 17. Thus, *Perkins* does not anticipate claim 17.

With regard to dependent claim 30, Applicants disagree that *Perkins* discloses “three or more fractures in the subterranean formation.” As indicated above, *Perkins* discloses a single fracture 22 with wings 22a and 22b, and secondary wings 22c, 22d, 22e and 22f. See col. 5, lines 52-54. Thus, *Perkins* does not anticipate claim 30. For similar reasons, Applicants assert that *Perkins* does not anticipate claim 31.

Additionally, Applicants note that the assertion that *Perkins* discloses that “fracture is governed by the stress distribution” is taken out of context in the Office Action. The passage actually indicates that “the height at any location in the fracture is governed by the stress distribution which consists of equal bounding zone stresses that are higher than the stresses in the disposal zone.” Col. 6, lines 10-14. Thus, Applicants assert that this passage of *Perkins* is inapplicable to “determining one or more geomechanical stresses” or to “determining a predicted stress field.”

Accordingly, Applicants respectfully request withdrawal of these rejections with respect to claims 1-2, 4-6, 16-19, 21, 24-25, and 27.

III. Remarks Regarding Rejections Under 35 U.S.C. § 103(a)

A. *Perkins* in view of *Soliman*

Claims 3, 20, and 26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Perkins* as applied to claims above, and further in view of M. Y. Soliman, J. L. Hunt, and M. Azari, "Fracturing Horizontal Wells in Gas Reservoirs," SPE 1999 ("*Soilman*"). Applicants respectfully disagree.

In order for a reference or combination of references to form the basis for a rejection under § 103(a), a prima facie case of obviousness must be established. Obviousness is determined by construing the scope of the prior art, identifying the differences between the claims and the prior art, determining the level of skill in the pertinent art at the time of the invention, and considering objective evidence present in the application indicating obviousness or nonobviousness. *Graham v. John Deere*, 383 U.S. 1, 17 (1966). The United States Supreme court has identified a number of rationales under which a prima facie case of obviousness may be established. See *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398, 127 S.Ct. 1727, 1731 (2007). Each rationale is directed towards identifying known elements in the prior art. See MPEP § 2143. Applicants respectfully submit that due to the differences between the claims as currently amended and the cited references, the Examiner has not established a prima facie case of obviousness, in that the combination of *Perkins* and *Soliman* does not establish that each limitation of the present claim was known in the prior art.

In order for a reference or combination of references to form the basis for a rejection under § 103(a), the reference or combination of references must establish that every limitation of the claim was known in the prior art. As discussed above in Section II, *Perkins* fails to establish that every limitation of the independent claims was known in the prior art. Moreover, *Soliman* fails to render obvious the deficiencies of *Perkins*. Rather, the Examiner merely relied on *Soliman* for its alleged teaching of "determining a cost-effective number of fractures; determining an optimum number for fractures, where the optimum number of fractures is the maximum cost-effective number of fractures that does not exceed the geomechanical maximum number of fractures." Claims 3, 20, and 26 depend, either directly or indirectly, from claims 1, 18, or 24 and therefore include all

the limitations of those independent claims. Thus, claims 3, 20, and 26 are patentable over the combination of *Perkins* and *Soliman*. See 35 U.S.C. § 112 4 (2004). Accordingly, for at least these reasons, Applicants respectfully request withdrawal of this rejection with respect to claims 3, 20, and 26.

B. *Perkins* in view of *Wright*

Claims 7-15, 22-23, and 28-29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Perkins* as applied to claims above, and further in view of WO 01/81724 A1 issued to Wright et al. ("*Wright*"). Applicants respectfully disagree and submit that due to the differences between the claims as currently amended and the cited references, the Office Action has not established a prima facie case of obviousness, in that the combination of *Perkins* and *Wright* does not establish that each limitation of the present claim was known in the prior art.

In order for a reference or combination of references to form the basis for a rejection under § 103(a), the reference or combination of references must establish that every limitation of the claim was known in the prior art. As discussed above in Section II, *Perkins* fails to establish that every limitation of the independent claims was known in the prior art. Moreover, *Wright* fails to render obvious the deficiencies of *Perkins*. Rather, the Examiner merely relied on *Wright* for its alleged teaching of "gathering and analyzing real-time fracturing data for each fracture." Claims 7-15, 22-23, and 28-29 depend, either directly or indirectly, from claims 1, 18, or 24 and therefore include all the limitations of those independent claims. Thus, claims 7-15, 22-23, and 28-29 are patentable over the combination of *Perkins* and *Wright*. See 35 U.S.C. § 112 4 (2004). Accordingly, for at least these reasons, Applicants respectfully request withdrawal of this rejection with respect to claims 7-15, 22-23, and 28-29.

IV. No Waiver

All of Applicants' arguments and amendments are without prejudice or disclaimer. Additionally, Applicants have merely discussed example distinctions from the cited references. Other distinctions may exist, and Applicants reserve the right to discuss these additional distinctions in a later Response or on Appeal, if appropriate. By not responding to additional statements made by the Examiner, Applicants do not

acquiesce to the Examiner's additional statements, such as, for example, any statements relating to what would be obvious to a person of ordinary skill in the art.

SUMMARY

In light of the above amendments and remarks, Applicants respectfully request reconsideration and withdrawal of the outstanding rejections. Applicants further submit that the application is now in condition for allowance, and earnestly solicit timely notice of the same. Should the Examiner have any questions, comments or suggestions in furtherance of the prosecution of this application, the Examiner is invited to contact the attorney of record by telephone, facsimile, or electronic mail.

Applicants believe that no fees are due in association with the filing of this response. Should the Commissioner deem that any fees are due, including any fees for extensions of time, Applicants respectfully request that the Commissioner accept this as a Petition Therefore, and direct that any additional fees be charged to McDermott Will & Emery's Deposit Account No. 500417, Order Number 086108-0341.

Respectfully submitted,

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